



Geopolitical dimensions of US oil security[☆]

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ARTICLE INFO

Keywords:

Geopolitics
Energy security
Crude oil
Climate change
Carter Doctrine
OPEC

ABSTRACT

The United States appears less exposed to geopolitical risks affecting its oil supply than at any time since the relatively stable period preceding the widespread oil sector nationalizations of the 1970s. Energy prosperity in the US contrasts with a more fraught period for traditional energy exporting states where geopolitical challenges have been compounded by fiscal stress and rising domestic energy demand. America's relationship with energy-exporting countries will continue to evolve as the US grows more self-sufficient and as more non-OPEC resources become viable, particularly in the Western Hemisphere. Expanded geographic diversification of oil production portends a gradual diminution of the strategic importance of large crude oil exporters. One longer term potential effect of the US shale revolution may be, for example, an unwillingness in Washington to maintain the Carter Doctrine's promise of protection for its interests in the Persian Gulf, although this appears unlikely in the near term. Nevertheless, continued economic growth in developing Asia and the unlocking of new energy resources around the world means the geostrategic relationships that have protected energy supplies over the last 40 years are unlikely to endure over the long run.

1. Introduction

In 1980, US President Jimmy Carter responded to the Soviet invasion of Afghanistan by declaring that America would use any means necessary to protect its interests in the Persian Gulf. At the time, global oil security had been devastated by the 1979 Iranian revolution, and the subsequent Iran-Iraq war. Protecting oil exports from Saudi Arabia and the smaller Arab monarchies took on heightened strategic importance. Between 1974 and 1981, Saudi Arabia, Kuwait, the United Arab Emirates and Qatar supplied 22% of the world's oil. That is the same fraction they have furnished since 2003 (BP, 2016).

In the two decades following the 1973 OPEC oil embargo, geopolitical risk to US oil security was at its apogee. Dependence on the Middle East was high, as was the threat of disruption. The period was marked by traumatic events mentioned above, as well as Soviet encroachment in Afghanistan, and the rise of Islamist opposition to the Saudi royal family, exemplified by the 1979 takeover of the Mecca Grand Mosque by Saudi insurgents.

Although production outages from Iran and Iraq were short-lived, a forceful US response was appropriate. Following Carter's declaration, the Pentagon established the US Central Command in 1983, giving it oversight of operations in the Middle East and Central Asia. The US Navy's Fifth Fleet was re-established in 1995 and housed at the Jufair naval base in Bahrain, which the Navy had taken over in 1971 upon

Britain's departure. The Fifth Fleet provides waterborne security in the Persian Gulf, the Red Sea, the Arabian Sea, and parts of the Indian Ocean. The US government spends between \$50 to \$100 billion per year maintaining the Carter Doctrine and the related security umbrella in the Gulf (O'Hanlon, 2010).

Since Carter's declaration, the geopolitical dimensions of US oil security have evolved. The 1991 break-up of the Soviet Union altered the geostrategic landscape. Securing the oil supply of the United States and its allies became less about competing with a bloc of socialist nation-states, and more about non-state threats based in the largest oil-producing region. Currently, US security policy remains focused on the Gulf because a stable supply of oil is recognized as critical for the daily functioning of the global economy (Collins and Krane, 2017).

Oil exports from Saudi Arabia and OPEC remain paramount for the global oil market balance, but global oil supply has become more diverse as numerous new players have entered the market. In the US, the shale revolution has led to a surge in supply relative to demand, facilitating American exports of light crude oil and refined products and disrupting the global market balance.

The easing of strategic pressure on global oil supply has been augmented by emerging challenges to the long-term position of oil as the world's dominant transportation fuel, particularly from electric vehicles. More generally, a push towards alternative fuels and greater fuel efficiency has been intensified by concerns about climate change, which

[☆] "This article is part of a Virtual Special Issue entitled 'Oil Supply Disruptions, U.S. Economic Activity and Oil Security'."

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has, ironically, enhanced oil security.

Altogether, developments on both the supply and demand sides of the market plus the entry of new technologies are forcing a recalibration of the energy security dialogue. Traditional consumer-oriented security of *supply* concerns are now comingled with producer-oriented concerns about security of *demand* and the emerging long-term threats to monetization of their oil resource wealth. The intensity of future oil demand growth now hinges on countries encompassing the 6 billion people living outside the OECD. Decisions on energy in China and India create the biggest opportunities for perturbing the status quo, overshadowing the waning significance of consumers in the developed world.

On balance, we believe these trends favor American oil security. The United States currently enjoys less exposure to geopolitical risks affecting its oil supply than at any time since the relatively stable period preceding the widespread oil sector nationalizations of the 1970s. In this context, several questions arise in regards to the long-held US role in global energy security.

- Given the increase in US oil production and in perceptions of oil security, what is the future of American relations with traditional oil-exporting countries? Are US security guarantees for Persian Gulf allies vulnerable?
- As demand in non-OECD countries grows, how might these developing states participate in ensuring the security of global oil supply?
- What geopolitical outcomes might result from continued diversification of oil supply from new resource opportunities, including shale?
- What geopolitical pressures might emerge if climate policies or disruptive technologies induce a reduction in oil's relative position in the global energy mix?

We address each of these questions in the sections below, before synthesizing the various themes in our concluding remarks.

2. The Carter Doctrine: vulnerable?

Given oil's position as the dominant fuel for mobility and transport, *energy security* and *oil security* have often been synonymous. In that context, one can define energy security policies as those that aim to avoid the macroeconomic dislocations associated with unexpected

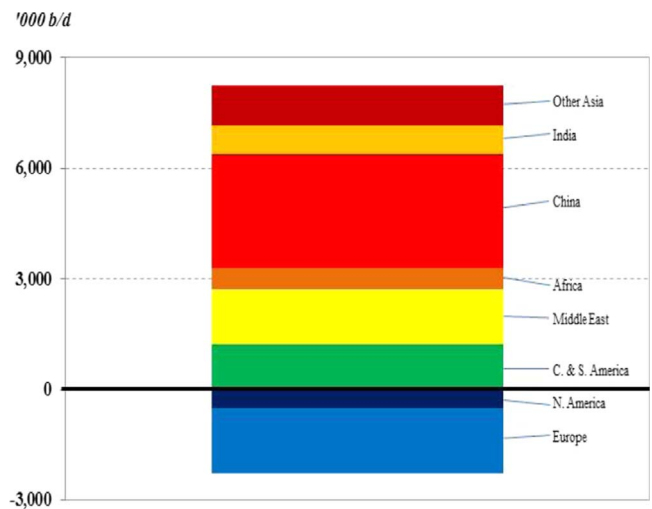


Fig. 2. Change in global oil demand by country/region, 2008–2015.

Source: BP Statistical Review of World Energy 2016.

disruptions in supply and/or rapid increases in the price of oil. So, it has generally been the case that energy security policies aim to maintain a stable supply of oil at a reasonable price.

Much has been written about the “oil-for-security” relationship between the United States and Saudi Arabia. Of course, direct US imports of oil from Saudi Arabia and its neighbors have never constituted the entire rationale for the US-Saudi alliance or America's interest in maintaining a significant military presence in the Gulf. Until 1991, Saudi Arabia and the Gulf monarchies were important Cold War allies in countering Soviet inroads in the Middle East, Africa, and particularly Afghanistan. Upon the dissolution of the Soviet Union, the strategic grounds of the US-Saudi friendship lost a key motivating factor.

However, the Carter Doctrine remained intact, and the US has retained its military presence in the Gulf for other reasons. First, oil exports from the six Gulf monarchies remain crucial to ensuring that global economic growth is enabled by a sufficient and reasonably priced supply of oil. Second, Saudi Arabia has demonstrated its willingness to accommodate US interest in oil market stability by increasing oil production in the event of a short-term market disruption. For example, the Saudis raised output in a coordinated effort to stabilize price in response to Iraq's invasion of Kuwait in 1990, the US-led invasion of Iraq in 2003, the 2011 campaign in Libya, and anti-nuclear sanctions that blocked exports from Iran.

Despite this, a number of coalescing factors could indicate a weakening of the conditions behind the Carter Doctrine. These include:

- Lower US oil import dependence;
- A realization that oil, while retaining strategic value, is widely available from a diverse set of suppliers, including a rising number in the Western Hemisphere;
- A revival of isolationist political philosophy in the United States, in particular with respect to US involvement in the Middle East, alongside Arab opposition to US intervention and military presence in the region;
- Saudi opposition to US policies on Iran, Iraq and the Arab Spring uprisings¹;
- The notion that US rapprochement with Iran would reduce the requirements for a regional US military presence, and, even if the US reduced or eliminated its Gulf presence, suppliers would continue to export oil without disruption (Lippman, 2016);

¹ For a detailed discussion of recent US-Saudi disagreements, see: Krane, Jim “The US-Saudi Relationship: Ripe for Improvement.” Issue Brief, Rice University's Baker Institute, January 2017. <http://www.bakerinstitute.org/files/11157/>

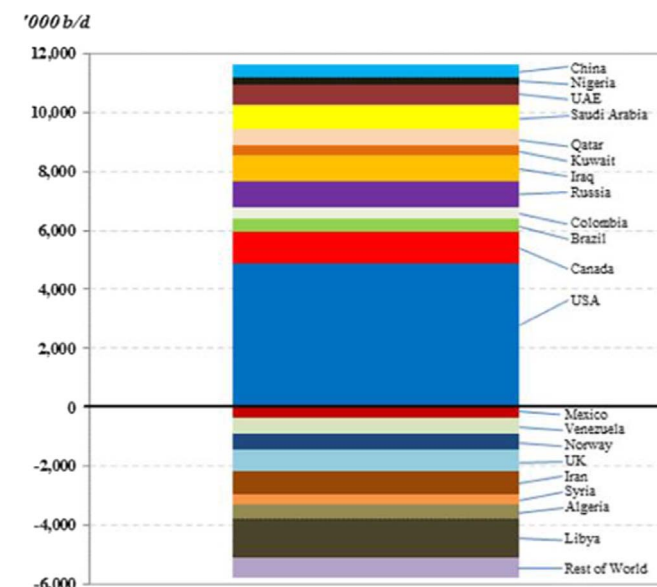


Fig. 1. Change in global oil production by country/region, 2008–2015.

Source: BP Statistical Review of World Energy 2016

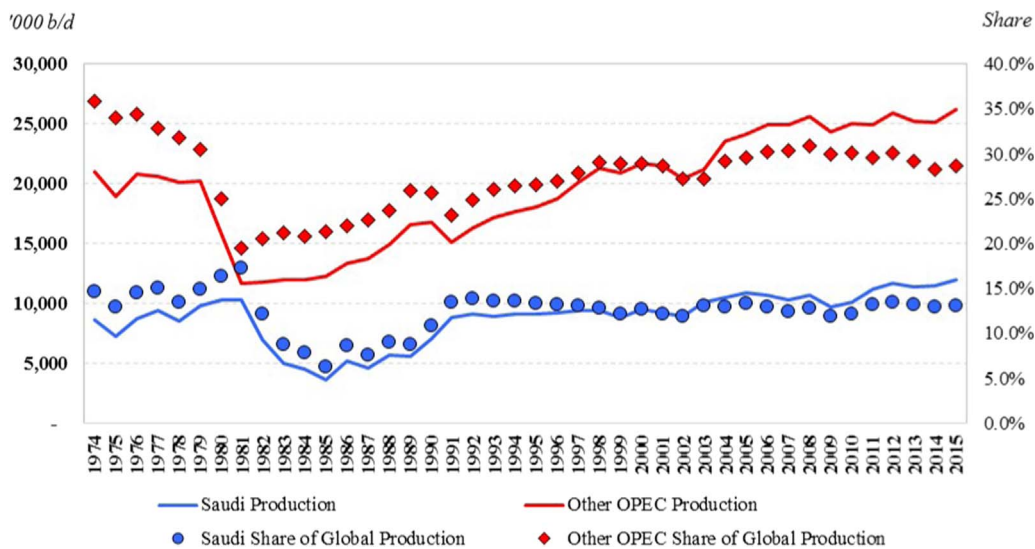


Fig. 3. Saudi Arabia and other OPEC oil output and share of global oil supply.
Source: BP Statistical Review of World Energy 2016.

- The shift in oil demand growth from the OECD toward developing Asia, and the growing economic dependence between Middle East exporters and Asian refiners²;
- The climate-driven evolution of the US transportation sector toward increasing efficiency and non-oil propulsion which may foreshadow a peak in US oil demand.

Shifting global oil production from 2008 to 2016 is illustrated in Fig. 1. New supply from the United States and others helped offset reductions elsewhere, caused by above-ground issues: sanctions on Iran, sector mismanagement in Mexico and Venezuela, and civil strife in Libya, Syria, Egypt and Algeria. High prices prompted the observed production response thereby diversifying supply to the global market. The rise in global oil production was needed to meet the net growth in demand over the same period. Fig. 2 depicts demand in the developing world – Asia in particular – increased at a breakneck pace, more than compensating for declines in North America and Europe.

Despite the factors outlined above, there remains a compelling case for retaining much of the current US oil security structure, including the Carter Doctrine. To begin, Saudi Arabia is also the sole producer with sufficient spare oil production capacity to cover an unexpected outage of a medium-sized supplier. Moreover, Saudi Arabia has proven willing to deploy its spare capacity to support US intervention in the region, a useful facet of the US-Saudi alliance. In addition, the Kingdom remains the single largest supplier of oil to the world, providing about 13% of global supply between 1992 and 2015 (see Fig. 3). As of today, there is no conceivable short-run combination of producers that could cover a disruption in the supply of Saudi oil. An outage in the kingdom would trigger a global economic crisis that could prove politically destabilizing for importing countries and damaging to international relations.

Second, US self-sufficiency in oil does not make America “independent” of the Middle East. Oil is a commodity traded openly in a globally fungible market. As such, prices are formed through interactions between supply and demand fundamentals, with short-run price movements influenced by factors such as OPEC spare production capacity, rates of demand growth, inventories, geopolitical events, natural disasters and financial markets. Given the deep interconnectedness of oil consumers and producers at a global scale, there is no such thing as independence from international oil market perturbations, despite the aspirations of US policymakers. Even if the United States were to become a net oil exporter, US oil and petroleum product prices would

remain exposed to international influences. Any outage in the Middle East will affect US prices no matter where America's oil is sourced.

Third, security of supply for every importing country is also intimately linked. Currently, there is no nation-state with the capacity to replace America's provision of external security in the Gulf and the strategic Strait of Hormuz, through which 20% of globally traded oil flows. Neither Russia nor China nor any combination of European powers has the force projection or logistics capability to assume the task. China, in particular, could gain strategic security from overseeing its own oil trade, but it is not yet capable of assuming the roles that the US Navy and Air Force now hold (Collins and Krane, 2017).

Fourth, although the strength of once weak Gulf militaries has improved over the past decade, forces are typically arrayed so that they do not pose an internal threat to family-based rule. Moreover, by construction, weapons systems in the Gulf are equipped to interoperate with US forces. Local militaries remain unable, on their own, to guarantee external security or transit of their oil, petroleum products and LNG through the Strait of Hormuz.

Fifth, even if China, Russia, or some coalition of entities could guarantee hard security for Gulf oil producers and the sea lanes used to bring their resources to market, it is doubtful that Washington would volunteer to step aside and bequeath its role. The United States accrues numerous strategic benefits from maintaining US forces on bases around the region, many of which are unrelated to oil. These include the intelligence and surveillance of Iranian nuclear and military sites, along with supporting US ground forces in Afghanistan and elsewhere, conducting counter-terror raids and surveillance, and maintaining the aircraft and unmanned drones operating between Somalia and Pakistan (Talmadge, 2016). American dominance of sea lanes used for oil transport also affords it coercive capabilities over producers and importers (Hughes and Long, 2015).

Finally, the US presence provides regional exporters with protection from hegemonic states, whether internal or external to the region.³ Nevertheless, some have made a strong case for downsizing the US force in the region (Rovner, 2016; Talmadge, 2016) which could save US taxpayers between \$5 billion and \$75 billion per year (Gholz et al., 2016), while others argue that a nearly complete US pullout can be

² Saudi investments in Asian refining capacity are covered in Krane, Jim “A Refined Approach: Saudi Arabia Moves Beyond Crude.” *Energy Policy* 82 (2015), 99–104.

³ A US departure would leave the region vulnerable to significant disruption by a hegemonic state. A disruption might favor the short-term interests of the hegemon, if it succeeded. Overall, however, political interference with oil exports runs contrary to the interest of regional producers because security of demand is predicated on reliable access to markets. An extended outage could leave oil reserves stranded and the monetization of regional resource wealth unfulfilled. As noted above, US rapprochement with Iran would reduce this risk.

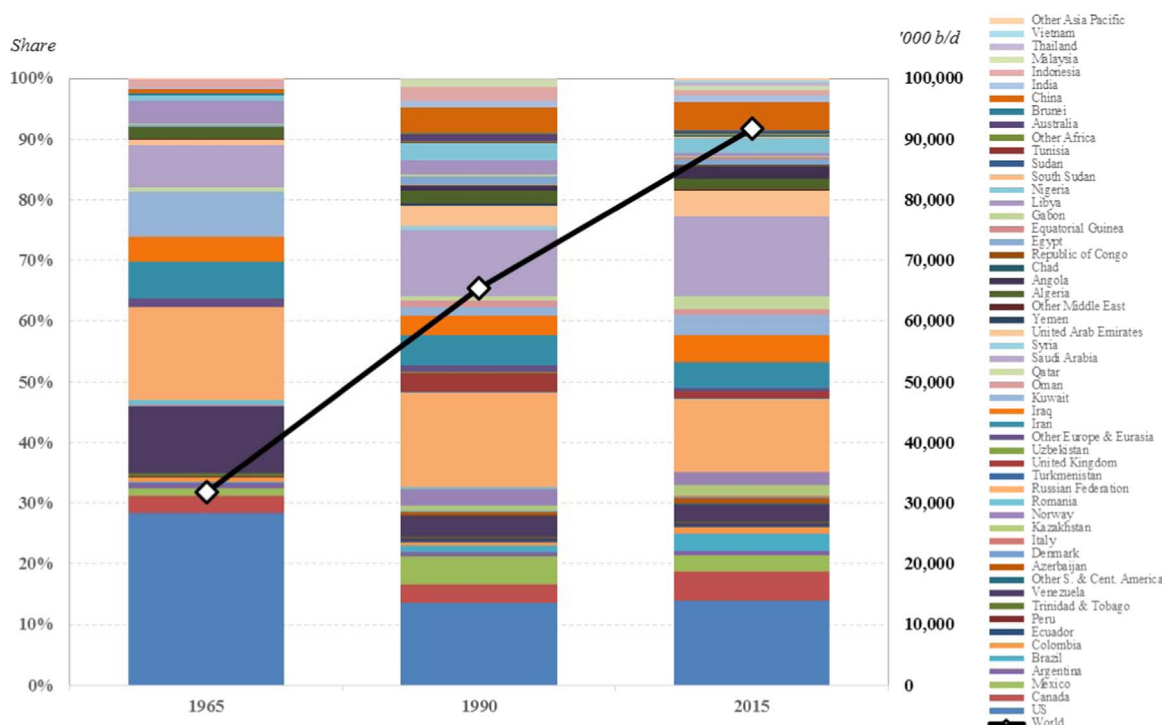


Fig. 4. Diversity of global oil supply.

Source: BP Statistical Review of World Energy 2016.

accomplished without risking US or global oil security (Glaser and Kelanic, 2017; Lippman, 2016). Our own research suggests that the importance and scale of Gulf participation in global oil markets means an American pullout from the region under the present circumstances would substantially raise geopolitical risk. In producer states that undergo regime change or instability, revival of oil production to pre-disturbance rates may take years, if it happens at all.

In sum, the security of Gulf exporters and the stability of their access to markets remains a US priority. The Carter Doctrine remains intact. However, it is undeniable that increasing US oil security suggests a weakening of the geopolitical status quo of the last 40 years. Among the influences worth exploring are the availability of new supplies, the role of climate policy, the potential for a peaking of global oil demand, and the possibility that maturing Gulf production could reduce the regional monarchies' prominence as exporters.

3. Diversification of global oil supply

The global oil market is diversifying. In 1973, OPEC produced more than half the world's oil, versus about 42% today. In the 1970s, there were 38 oil producers of note in the BP Statistical Review. Of those, only 16 produced more than 500,000 b/d, and the top 10 producers supplied about 82% of the global oil market. By contrast, today, there are 49 producers, with 28 supplying more than 500,000 b/d, and the top 10 are responsible for 65% of the total (Fig. 4).

The United States constitutes a microcosm of the same phenomenon. As recently as the early 2000s most US oil flowed from Alaska and the Gulf of Mexico. But, today tight oil production has spread into Texas, New Mexico, Oklahoma, North Dakota, Colorado, and Pennsylvania. In fact, oil output from shale drove a significant policy shift in the US: the lifting of a decades-old oil export ban. This shift carries consequences for domestic development, geopolitics and trade (Medlock, 2015). In general, an increasing diversity of producers in the global oil market improves the security of supply by expanding fungibility and reducing the risk that an outage of a single producer poses to global oil market, particularly when trade is allowed to proceed

unimpeded (Medlock, 2016). A proliferation of producers also inhibits the ability of OPEC or any other combination of suppliers to use production cuts for geopolitical ends, as was the case in the 1973 embargo. In the current environment, oil importers can deploy market-oriented tools to influence foreign policy, for instance, by restricting exports from countries where behavior runs afoul of international norms, as has been seen recently with international sanctions on Iran.

Geographical diversity of supply is on the increase, with a proliferation of new or emerging producers in the Western Hemisphere. These include the US, Canada, Brazil, Colombia and Argentina. In addition, the ongoing energy reforms in Mexico portends a positive outlook for production, and, given the large resource endowment in Venezuela, future production potential is only held back by above-ground issues. The energy security implications are even more pronounced when one considers the relative political stability of the US as a significant supplier of oil to the global market. The increase in supply from a region with a large measure of political and economic stability enhances the stability of the market overall (see Medlock, 2015).

The introduction of shale effectively extends, or flattens, the global supply curve. This can be evidenced by the fact that US producers effectively "cut" production in less than 12 months by over one million barrels per day when oil prices fell from 2014 through 2015. Of course, the short-term responsiveness of tight oil production is driven by market forces rather than policy, but it adds an element of diversity to the supply portfolio that did not previously exist. OPEC producers now face a more elastic "fringe" supply curve which reduces the effectiveness of their efforts to impose output discipline or retain market share. Altogether, this implies a more robust level of supply at a lower price, which reinforces fungibility and, hence, energy security.

While shale production from has already begun to reshape oil security, the entirety of its implications for global oil markets has yet to be realized. Even a modest increase in shale production outside the United States, for example, could further enhance global oil security by increasing diversification and augmenting supply elasticity. Shale's unique characteristics – small-scale, short-cycle investments – may also reduce opportunities for political interference, particularly in places

where “above-ground” issues hinder otherwise viable production. In Argentina, for example, despite significant political interference that has driven away foreign investors – even expropriated their businesses⁴ – shale has continued to attract interest.⁵ Given the continuous investment and drilling required to maintain output, much less grow it, shale developments do not lend themselves to expropriation in the same way that conventional oil is vulnerable to the “obsolescing bargain” of concession agreements that get abrogated once infrastructure is built and large fixed costs are sunk. Were a government to seize a shale operation, the steep decline rates typical of shale wells would mean that production would drop precipitously. In this way, shale resources pose a less viable target for nationalization than what has been witnessed in the past.

Overall, lower restrictions on trade coupled with greater diversity and higher elasticity of supply raises fungibility and market liquidity, which, in turn, enhances oil security in the United States and everywhere else.

4. Climate change policy

Of the three main fossil fuels, oil retains a privileged position in the global energy market, but one that is coming under increasing exposure to climate-based constraints on carbon emissions. While oil companies and producer states have been the focus of speculation about stranded reserves, oil's place in the future energy mix appears relatively assured, primarily due to the long-term nature of developing and integrating viable substitutes in the transportation sector. At the moment, transport consumes around 60% of the world's refined liquid fuels, and 95% of the world's transportation services are oil-based (US Energy Information Administration, 2017a). In transportation, oil has few substitutes. Only electric vehicles, natural gas and biofuels offer a reasonable replacement, but these suffer from shortcomings related to energy density, cost per mile, range, and even carbon content. As such, a working thesis herein is that oil is unlikely to lose its primacy in transportation without concerted government policies that impose heavy penalties on emissions or favor alternatives (Covert et al., 2016). The EIA expects 88% of global transport to remain based on liquid petroleum-based fuels in 2040.

Perhaps due to such factors, oil reserves are the least exposed of the three fossil fuels to abandonment by 2050, as just a third of current conventional crude oil reserves would be abandoned in a successful 2 °C scenario, as opposed to half of gas and over 80% of coal reserves (McGlade and Ekins, 2015). Given the fading likelihood of limiting emissions in line with the 2 °C scenario (Schleussner et al., 2016), actual stranding of reserves is likely to be even more modest. This suggests that the United States is likely to remain dependent on oil-based fuels and markets in coming decades and, hence, exposed to risks affecting them.

Even so, climate concerns have incentivized governments, companies and individuals to develop and adopt oil substitutes. In previous times, oil substitutes were only seriously considered when high oil prices made them viable. Now, markets and policy are internalizing damages associated with CO₂ emissions, which raises the cost of oil use. In fact, efforts to abate environmental costs may already be impacting demand, and could have long term effects (Krane, 2017). Moreover,

⁴ Spanish oil producer Repsol saw its Argentine business expropriated in 2012. See: Tracy Rucinski, Andrés González and Kevin Gray, “Spain's Repsol agrees to \$5 billion settlement with Argentina over YPF.” Reuters, Feb. 25, 2014. (Accessed March 2, 2017) <http://www.reuters.com/article/us-repsol-argentina-idUSBREA101LJ20140225>.

⁵ The share of unconventional in Argentina's overall natural gas production was 23% in December 2016, up from 18% in the same month of 2015. The country's unconventional gas production has almost doubled over the past two years, growing from 14.4 million cubic meters/day (MMcm/d) in December 2014 to 27.7 MMcm/d in December 2016. See: Chris Noon, “Unconventionals hit 23% of Argentine output.” Interfax Global Energy, Feb. 7, 2017. (Accessed February 27, 2017) <http://interfaxenergy.com/gasdaily/article/23864/unconventionals-make-up-23-of-argentine-output>.

climate action in the United States may prove impervious to the Trump administration's relaxation of federal climate policy, since US states and individual firms have continued to pursue these goals.

Alternatively, it is possible that climate-directed policy could, paradoxically, *stimulate* oil demand. As Sinn and others have argued, carbon taxes and other restrictions, if not designed properly, could trigger the so-called Green Paradox. Producers might respond to expectations of increasing restrictions on future oil consumption by engaging in familiar “price war” behavior: Increasing current oil production in an effort to monetize existing oil wealth thereby preventing the stranding of reserves. Increased production, all else equal, would reduce prices and make oil more attractive to consumers, reversing the intended effect of climate policies (Sinn, 2012). Governments grappling with climate change policies would be forced to respond by intensifying restrictions on oil use.

Perceptions of free-riding on climate action could also open rifts between states and blocs. For instance, if developing states proceed with carbon-intensive industrialization while developed countries adopt policies to reduce emissions, relations between the OECD and non-OECD could become strained. In the boldest of outcomes, developed states could take on a quasi-enforcement role that involves imposing restrictions on trade and multilateral funding. Climate action could render existing geopolitical stresses more complex.

How might all of this affect US oil security? To begin, as the US transportation sector shifts away from petroleum-based fuels – and grows more efficient in their use – the United States becomes less exposed to geopolitical risks in the oil market. The EIA predicts that US transportation sector fuel demand will remain relatively flat through 2050 (US Energy Information Administration, 2017b). Hence, the more Americans adopt alternate vehicle technologies and fuels, the more they insulate themselves from oil disruptions.

Reduced exposure to oil market risk does not necessarily make the United States more *energy* secure because new risks and exposures will inevitably come to the fore. These could be related to rare earth minerals or other factors that affect battery costs, concerns about the security of the electricity grid, or something else entirely. Since we only consider US oil security in this paper, those issues are left for future consideration. But, we raise it herein because the *net* cost of shedding one risk for another must be part of the calculus of future policy.

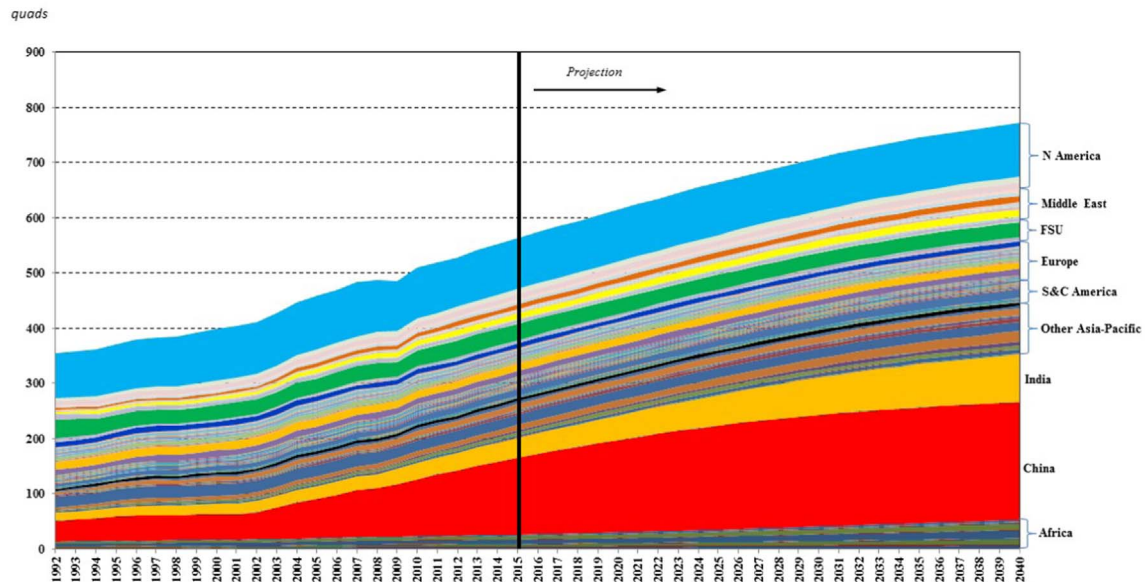
Regarding US foreign policy, since goals to mitigate climate stresses run contrary to growing oil demand, climate-directed policies could reduce the strategic importance of oil exporters. This could, in turn, negatively impact Washington's willingness to protect allied petro-states. Of course, technological developments could also work in favor of oil. For example, the development of a cost-effective process that enables oil consumption without carbon emissions could reinforce the current order, and re-establish the importance of diversity of oil production in meeting global security of oil supply.

5. Global oil demand: peaks and shifts in growth

As noted in Fig. 2, oil demand has been falling in the OECD in recent years due to increasing end-use efficiency and lackluster economic growth, but demand growth in the developing world has more than offset these declines. Given the scale of populations outside the OECD and the strong prospects for economic growth, the future of oil demand and global oil trade is uncertain. Several recent forecasts project the onset of a peak in global oil demand, while others do not. Almost universally these forecasts suggest that future demand for oil will shift to the developing world – particularly China, India and the ASEAN countries – over the next couple of decades. The Baker Institute forecasts that global oil demand, driven by economic growth and expanding populations in the developing world, will increase slowly until at least 2040 (see Fig. 5).

Other recent forecasts make varying estimates on the timing of a projected peak. For example,

Global Energy Demand



Global Oil Demand

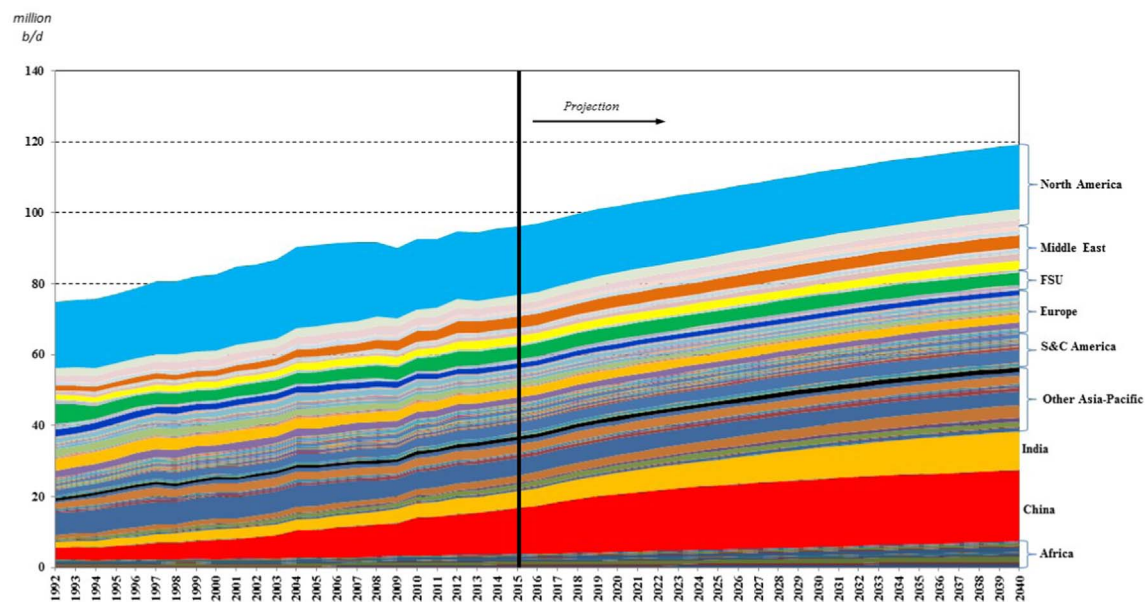


Fig. 5. Global energy and oil demand, 1992–2040.

Source: International Energy Agency (historical data); Baker Institute CES World Energy Demand Model (projections)

- A 2016 statement from Shell projected that the world could see total oil demand reach its zenith as soon as 2021.⁶
- The former Saudi oil minister, Ali Naimi, suggested peak oil demand may arrive by 2025.⁷
- The IEA has forecasted that gasoline demand may be nearing its peak, but that overall global oil demand will rise until at least

2040.⁸

- Exxon sees no peak before 2040, due to continued growth in diesel and petrochemical demand.⁹

⁶ R. Katakey: *Energy Giant Shell Says Oil Demand Could Peak in Just Five Years* (Nov. 2, 2016), Bloomberg. Available at: <https://www.bloomberg.com/news/articles/2016-11-02/europe-s-biggest-oil-company-thinks-demand-may-peak-in-5-years> (accessed 31 January 2017)

⁷ P. Waldman: *Saudi Arabia's Plan to Extend the Age of Oil* (April 12, 2015), Bloomberg. Available at: <http://www.bloomberg.com/news/articles/2015-04-12/saudi-arabia-s-plan-to-extend-the-age-of-oil> (accessed 31 January 2017).

⁸ J. Blas and L. Blewitt: *Tesla Shock Means Global Gasoline Demand Has All But Peaked* (Nov. 21, 2016), Bloomberg. Available at: <https://www.bloomberg.com/news/articles/2016-11-22/the-tesla-shock-global-gasoline-consumption-has-all-but-peaked> (accessed 31 January 2017); A. Cooper: *Oil demand won't peak before 2040, despite Paris deal: IEA* (Nov. 16, 2016), Reuters. Available at: <http://www.reuters.com/article/us-oil-outlook-iaa/oil-demand-wont-peak-before-2040-despite-paris-deal-iaa-idUSKBN13B0OP> (accessed 17 October 2017)

⁹ Exxon Mobil's "Outlook for Energy: A View to 2040" finds no "peak" and projects average oil demand growth of 0.7% per year to 2040. Available at: <http://cdn.exxonmobil.com/~media/global/files/outlook-for-energy/2016/2016-outlook-for-energy.pdf> (accessed 31 January 2017)

- McKinsey predicts that global oil demand for transportation may peak as early as 2025, but its use as a petrochemical feedstock will allow overall demand to increase slowly until 2050.¹⁰

While oil demand will inevitably peak at some point, most forecasts find that demand continues to grow, prolonging requirements for oil exploration and production.

Regardless of the timing, the developed world's transition away from fossil fuels could represent a disruptive force in international relations. As oil demand grows in the developing world, trade flows will continue to adjust, uniting Middle Eastern producers with Asian consumers. Moreover, as oil resources in the Western Hemisphere are developed, global oil flows will shift even further. The combined forces of supply diversification and reduced dependence could reduce American strategic interest in the Middle East, despite concerns about pricing stability (see Section 2).

6. Plateauing production and reduced exports

It is also possible that the global oil market will undergo a new supply shift, due to domestic processes within key producers that reduces their ability to maintain exports. As producing regions mature, oil production tends to plateau, hence the need for continued exploration and new discoveries. Meanwhile, domestic oil demand – propelled by rising income and population – may begin to displace exports. If affected producing nations are dependent on export revenues for fiscal stability, this becomes an untenable paradigm. When domestic prices are often heavily subsidized to support social and political aims, the ability to maintain export volumes is challenged by excess domestic demand. Then, if displacement of exports is not attenuated by growth in domestic production or by policies that succeed in curtailing demand, net exporters can transform themselves into net importers. This process has taken place most recently in Indonesia, Malaysia, and China.

Oil demand growth in the Gulf monarchies has averaged about 6% per year since 1973, with domestic needs claiming ever-increasing shares of output. Saudi demand now claims nearly a third of the kingdom's oil production (Figs. 6 and 7), and other countries have had similar demand growth alongside slipping or stagnant production – including Mexico, Trinidad & Tobago, Venezuela, Iran, Qatar, Saudi Arabia, UAE, and Algeria.

These trends are well understood within exporting countries, but many retain long-held subsidies on end-use prices that fail to fully rationalize demand growth. The onset of low oil prices in late 2014 provided the impetus for several oil-producing countries to reduce subsidies on energy products, and early indications suggest that demand is responding to higher domestic prices (Krane and Monaldi, 2017). Whether the shifts in domestic pricing are able to bring about significant reductions in domestic demand remains to be seen. However, even small reductions in the rate of growth can add decades to a country's ability to export oil. For example, holding all else constant, if Saudi Arabia maintained an average annual increase in domestic oil demand of 7%, the kingdom would consume all of its 2015 oil production of 10.2 million barrels per day by 2035. Reducing that growth rate to 2% pushes the date out to 2085.¹¹

Despite the vital importance to the economies of energy exporting states, reducing energy subsidies is politically difficult, especially in autocratic polities where welfare benefits underpin public support for unelected regimes (Krane and Monaldi, 2017; Victor, 2009). It remains to be seen whether important exporting states can neutralize the

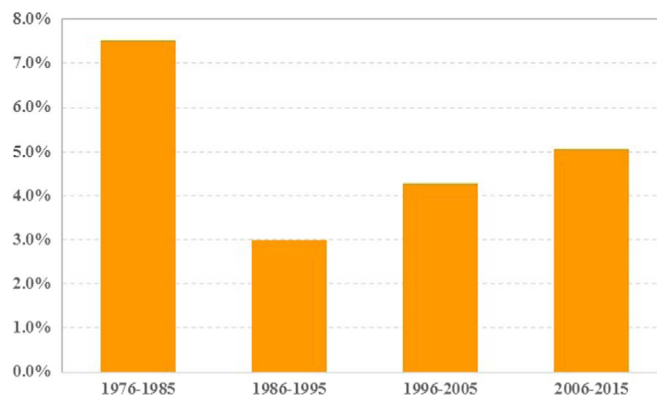


Fig. 6. Average annual growth in GCC oil demand by decade, 1976–2015.

Source: BP Statistical Review of World Energy 2016.

domestic challenge to the long-term viability of their oil exports. If they cannot, global oil security – and their relations with Washington – may falter.

7. Conclusion

The security of America's oil supply and stability in global oil trade remain critical components of US national security. While the potential exists for rapid shifts in energy systems at the regional level, energy transitions tend to occur slowly on a global scale. Geopolitical forces, by contrast, are far more volatile. As the Iranian revolution and the fall of the Soviet Union demonstrate, sweeping change can upend long-standing relationships overnight.

Ongoing trends in global oil markets appear to be pointing to continued improvement in the security of US oil supply. US domestic production is increasing as is the geographic diversity of global oil supply, and environmental pressures are encouraging greater efficiency and adoption of substitute technologies. All of these factors contribute to US oil security.

Trends in oil geopolitics point in the opposite direction. The Trump administration's transactional approach to international relations has intensified the uncertainty of an already volatile period among oil exporting states. Since the onset of the Arab Spring uprisings in 2010, instability has been exacerbated by fiscal stresses of low oil prices, the rise in tension between Sunni and Shia Muslim-dominated regions and the attendant proxy wars in Syria, Iraq, Yemen and Libya, crumbling stability in Venezuela, and a breakdown in relations among Gulf oil sheikhdoms. Most recently, the Trump administration has aggravated regional geopolitical tensions by taking sides in the intra-Gulf dispute. It has also created broad rifts with long-standing allies over its announced intention to withdraw from the 2015 Paris climate agreement.

US energy security has improved, even against a backdrop of rising tensions in oil producing regions. In turn, this has prompted questions about whether the United States needs to continue enforcing the provisions of the Carter Doctrine, which require Washington to maintain a large and costly military presence in the Gulf. Despite a strong *prima facie* case for drawdown, we argue that a continued US presence remains compelling.

The fact that the oil market is *global* exposes even self-sufficient countries to the threat of macroeconomic dislocations associated with a spike in price. Expanding global fungibility and deepening of trade networks mitigates the likelihood of any one region being disproportionately impacted, but interconnected markets make Middle East stability of interest to all.

America's interest in the Gulf is ultimately predicated on two key factors. One, Gulf states must remain important exporters; Two, oil must maintain strategic importance as a vital fuel for the world's economies. Should exports falter or oil substitutes gain ground, the

¹⁰ O. Roelofs, N. Sharma, R. Sutorius, and C. Tryggstad: *Is peak oil demand in sight?* (June 2016) McKinsey. Available at: <http://www.mckinsey.com/industries/oil-and-gas/our-insights/is-peak-oil-demand-in-sight> (accessed 31 January 2017).

¹¹ This is meant only to be an illustrative *ceteris paribus* exercise as it takes no account of depletion, population growth, changes in technology, plateauing of demand for structural reasons, or any of the myriad factors that affect oil demand and production.

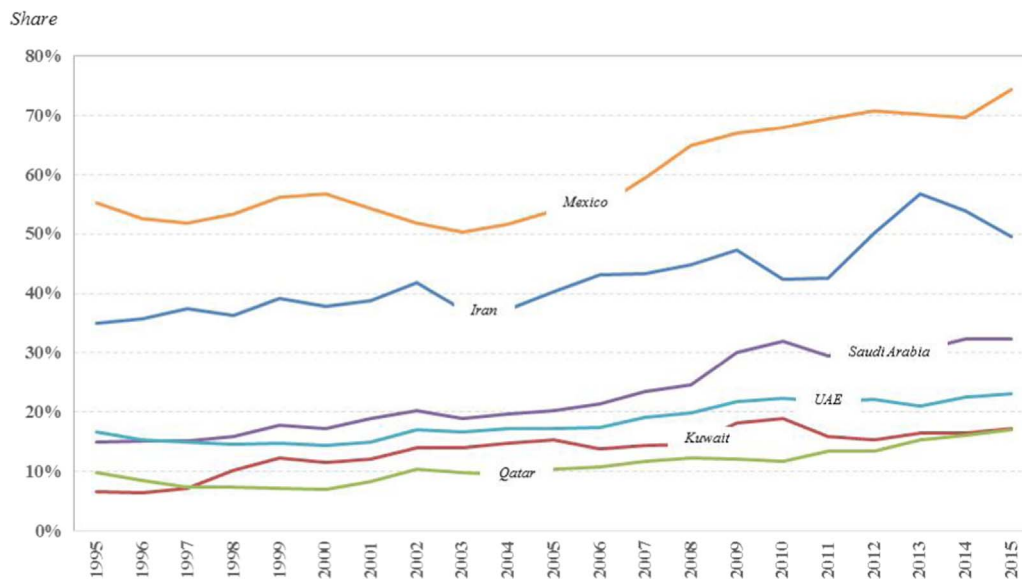


Fig. 7. Select countries oil consumption as a percentage of production, 1995–2015.

Source: BP Statistical Review of World Energy 2016.

strategic stature of oil exporting states will decline. Conversely, a return to tighter oil markets – or improvements in carbon-capture processes – could reinvigorate a commitment to protecting producers and global oil shipments.

Farther afield, US oil security depends on development choices made in China, India and other Asian states where once impoverished masses are rising into the middle class. Will China and India add oil supply to the list of arenas in which they compete? Or will these countries leapfrog oil-using technologies as engines of economic growth? Is China's expansion of infrastructure to support its ubiquitous electric bicycles a harbinger of things to come in transportation, or is the fact that 23.9 million of its 24.4 million vehicles sold in 2016 were of the internal combustion engine variety a greater signal?¹² The oil intensity of China and India, as well as populous ASEAN states like Indonesia, will weigh greatly on future oil security in the United States. Hence, international relations remain central to US energy security, and the center of gravity remains, for now, in the Middle East.

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¹² Data from China Association of Automobile Manufacturers.